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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/752,099	01/07/2004	Marco Sanwald	713-1000	2313

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EXAMINER	
GILLAN, RYAN P	

ART UNIT	PAPER NUMBER
3746	

DATE MAILED: 11/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/752,099	SANWALD, MARCO	
	Examiner	Art Unit	
	Ryan P. Gillan	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/1/04,2/22/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 5, 11-13, 15, 16 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lane et al. (2,667,280) in view of Schmitkons et al. (5,739,429). Lane teaches a method and pumping system for powder (col. 1 lines 1-6), containing at least one powder pump (clearly seen in figure 1) fitted with a metering chamber (2a) which is bounded by a chamber housing (2) and an expelling element (4), said expelling element which is forward-displaceable relative to the chamber housing during a pressure stroke and backward during a suction stroke, the pump chamber comprising a powder intake duct (9) associated with a powder intake valve (8), further a powder outlet duct (18) associated with a powder outlet valve (17), and a compressed gas intake duct (12) associated with a compressed gas intake valve (14), the powder intake valve being opened to aspirate a metered quantity of powder into the metering chamber and the powder outlet valve and the compressed gas intake valve being closed (col. 3 lines 4-55), whereby the expelling element moving in the direction of the suction stroke is able to aspirate powder through the powder intake duct into the metering chamber (col. 3 lines 4-55), and the powder intake valve being closed in order

to convey the metered quantity of powder out of the metering chamber, and the powder outlet valve and the compressed gas intake duct are opened, as a result of which compressed gas flowing from the compressed gas intake duct is able to force the metered quantity of powder from the metering chamber into the powder outlet duct (col. 3 lines 4-55), the excursion of the expelling element is constantly the same size for all stroke displacements; the powder intake valve and the powder outlet valve are automatic valves which are automatically opened resp. closed by the pressure differential across their two valve sides (col. 3 lines 4-24); the powder intake valve and the powder outlet valve are automatic valves actuated in the manner of a check valve by differential gas pressure across their valve element (col. 3 lines 4-24), said valve element being displaceable as a function of this gas pressure differential relative to a valve seat into its open or into its closed position and can be latched into said particular position (col. 3 lines 4-24).

3. Lane fails to teach a pump control unit to drive the compressed gas intake valve, characterized in that the pump control unit comprises a time controller by means of which the conveyance of powder out of the metering chamber is initiated as a function of the predetermined delay time elapsed since a predetermined operational point, the compressed gas being introduced at the end of the time delay into the metering chamber and the quantity of powder metered until the end of the time delay is forced by the compressed gas out of the metering chamber; characterized in that the pump control unit comprises a timer and transmits each time, upon the lapse of a predetermined cycle time, control signals to a reversal device to reverse the motion of

the expelling element from suction stroke to pressure stroke and vice-versa from pressure stroke to suction stroke at the predetermined cycle time, and in that the pump control unit is designed to initiate at the time controller the predetermined delay time each time as a function of the time that control signal was generated which initiates the beginning of the suction stroke, the compressed gas being introduced at the end of said time delay into the metering chamber and the quantity of powder that was metered until the end of the delay time being forced out of the metering chamber by the compressed gas; characterized in that the pump control unit comprises a time controller to initiate powder conveyance, as a function of the predetermined delay time elapsed after a predetermined suction stroke position of the expelling element, out of the metering chamber, compressed gas being introduced at the end of the time delay into the metering chamber and the quantity of powder metered until the end of the delay time being forced by the compressed gas out of the metering chamber; characterized in that a second time delay takes place at least at one of the motion reversal dead points of the expelling element before the expelling element having moved in one direction is moved in the pertinent other direction.

4. Schmitkons teaches a method and pump control unit (30) to drive the compressed gas intake valve (91, 95, 97), characterized in that the pump control unit comprises a time controller (col. 12 lines 6-12) by means of which the conveyance of powder out of the metering chamber (18a, 18b, 18c) is initiated as a function of the predetermined delay time elapsed since a predetermined operational point (col. 7 lines 8-32), the compressed gas being introduced at the end of the time delay into the

metering chamber and the quantity of powder metered until the end of the time delay is forced by the compressed gas out of the metering chamber (col. 11 line 58 - col. 12 line 12); characterized in that the pump control unit comprises a timer (col. 7 line 33-40) and transmits each time, upon the lapse of a predetermined cycle time, control signals to a reversal device (col. 8 lines 51-65) to reverse the motion of the expelling element from suction stroke to pressure stroke and vice-versa from pressure stroke to suction stroke at the predetermined cycle time, and in that the pump control unit is designed to initiate at the time controller the predetermined delay time each time as a function of the time that control signal was generated which initiates the beginning of the suction stroke (col. 8 lines 51-65), the compressed gas being introduced at the end of said time delay into the metering chamber and the quantity of powder that was metered until the end of the delay time being forced out of the metering chamber by the compressed gas (col. 11 line 58 - col. 12 line 12); and by the pump control unit being designed to automatically compare the time of the sensor signal with the time of at least one of the monitoring control signals to deduce whether the time interval between said two times deviates from a predetermined value, and by generating an error signal when a predetermined deviation from the predetermined values does arise (col. 7 lines 33-58); the time delay is variably adjustable (col. 11 line 58 - col. 12 line 12); characterized in that the pump control unit comprises a time controller to initiate powder conveyance, as a function of the predetermined delay time elapsed after a predetermined suction stroke position of the expelling element out of the metering chamber (col. 7 lines 33-58), compressed gas being introduced at the end of the time delay into the metering chamber and the

quantity of powder metered until the end of the delay time being forced by the compressed gas out of the metering chamber (col. 11 line 58 - col. 12 line 12); characterized in that a second time delay takes place at least at one of the motion reversal dead points of the expelling element before the expelling element having moved in one direction is moved in the pertinent other direction (col. 8 lines 51-64).

5. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the powder pump as taught by Lane to incorporate the control system as taught by Schmitkons as a means of monitoring the powder flow rate of the pump and providing a means of adjusting the flow rate of the powder (col. 3 lines 6-20).

6. Claims 3, 4, 6-10, 14, 18, 19 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lane et al. (2,667,280) and Schmitkons et al. (5,739,429) in view of Elsey, Jr. et al. (5,816,778). The combination of Lane and Schmitkons teaches all of the above cited limitations, but fails to explicitly teach at least one monitoring sensor detecting when the expelling element is at a predetermined position and generating a signal upon detecting that the expelling element is in the predetermined position, by the pump control unit being operationally connected to the minimum of one monitoring sensor; at least two monitoring sensors which are connected to the pump control unit to detect when the expelling element is situated in one of two different predetermined positions and to generate sensor signals when detecting the expelling element in the predetermined positions; the predetermined suction stroke position is a suction stroke initial position; the predetermined suction stroke position is situated between a suction stroke initial position and a suction stroke final position; the

predetermined suction stroke position is situated between a suction stroke position and a suction stroke final position, nearer the former than the latter; least one sensor to generate a signal when the expelling element is situated in a predetermined suction stroke position; a pump control unit implementing the reversal of motions of the expelling element from suction stroke to pressure stroke and vice versa as a function of signals from sensors each of which generates a signal when the expelling element is situated along the stroke excursion at either of two predetermined motion reversal positions; characterized in that the expelling element is a flexible membrane; at least two of the said powder pumps are used, their powder intake ducts being connected or connectable to a powder source and their powder outlet ducts being connected or connectable to a common powder feed aperture, and in that the two powder pumps are operated in opposition whereby a metered quantity of powder may be expelled in alternating manner from the metering chamber of one powder pump or from the metering chamber of the other powder pump, by means of the compressed gas into the powder outlet duct , and reversely powder may be alternatingly aspirated through the powder intake ducts into either of the other metering chamber; the expelling element of the pumps are actuated by a common drive.

7. Elsey teaches one monitoring sensor (52) detecting when the expelling element (33, 35) is at a predetermined position and generating a signal upon detecting that the expelling element is in the predetermined position (col. 2 lines 23-35), by the pump control unit being operationally connected to the minimum of one monitoring sensor (col. 2 lines 23-35); at least two monitoring sensors (52,54) which are connected to the

pump control unit to detect when the expelling element is situated in one of two different predetermined positions and to generate sensor signals when detecting the expelling element in the predetermined positions (col. 6 lines 42-67); the predetermined suction stroke position is a suction stroke initial position (col. 6 lines 18-41); the predetermined suction stroke position is situated between a suction stroke initial position and a suction stroke final position (col. 6 lines 42-67); the predetermined suction stroke position is situated between a suction stroke position and a suction stroke final position, nearer the former than the latter; least one sensor (col. 6 lines 42-67) to generate a signal when the expelling element is situated in a predetermined suction stroke position (col. 6 lines 42-67); a pump control unit implementing the reversal of motions of the expelling element from suction stroke to pressure stroke and vice versa as a function of signals from sensors each of which generates a signal when the expelling element is situated along the stroke excursion at either of two predetermined motion reversal positions(col. 6 lines 42-67); characterized in that the expelling element is a flexible membrane (33,35); at least two of the said powder pumps (44,46) are used, their powder intake ducts (80) being connected or connectable to a powder source (integral with 80) and their powder outlet ducts (90) being connected or connectable to a common powder feed aperture (integral with 90), and in that the two powder pumps are operated in opposition whereby a metered quantity of powder may be expelled in alternating manner from the metering chamber of one powder pump or from the metering chamber of the other powder pump (clearly seen in figure 2), and reversely powder may be alternatingly aspirated through the powder intake ducts into either of the other metering

chambers (col. 5 lines 23-47); the expelling element of the pumps are actuated by a common drive (col. 5 lines 30-46).

8. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the pumping system disclosed by Lane and Schmitkons by incorporating the double diaphragm pump and positions sensing control unit as a means of increasing the flow of pumped material, and providing a durable, dependable control unit for controlling the stroke length of the pump and thus accurately controlling the overall flow of pumped material (col. 3 lines 49-67).

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lane et al. (2,667,280) and Schmitkons et al. (5,739,429) in view of Shutic et al. (5,078,084). The combination of Lane and Schmitkons teaches all of the limitations of claim 15, but fails to teach that the powder intake valve (38-1, 38-2) and the powder outlet valve (42-1, 42-2) are automatic valves of the duck bill kind of which the duck bill automatically opens and closes on account of the pressure difference between the inside and the outside of the duck bill.

10. Shutic teaches a powder valve (149) which is an automatic valve of the duck bill kind of which the duck bill automatically opens and closes on account of the pressure difference between the inside and the outside of the duck bill (col. 9 lines 60-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the powder intake and outlet valves as taught by Lane with duck bill type valves as taught by Shutic as a more reliable means of preventing the reverse flow of of powder material (col. 9 lines 60-64).

Conclusion

11. The prior art made of record on the attached Form 892 and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan P. Gillan whose telephone number is 571-272-8381. The examiner can normally be reached on 8:30 am - 5:00 pm; Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg can be reached on 571-272-4828. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Ehud Gartenberg

EHUD GARTENBERG
SUPERVISORY PATENT EXAMINER